CHEVRON RICHMOND REFINERY

TENTATIVE ORDER AND NPDES PERMIT

REQUEST FOR *COMPLIANCE SCHEDULE* AND DEMONSTRATION OF INFEASIBILITY TO ACHIEVE IMMEDIATE COMPLIANCE WITH CALCULATED EFFLUENT LIMITATION FOR

MERCURY

Executive Summary

Pursuant to discussions with staff and to §2.1 of the SWRCB's *Policy for Implementation of Toxics Standard for Inland Surface Waters, Enclosed Bays, and Estuaries of California* [the "SIP"], Chevron submits as an addendum to its NPDES permit application a request for a compliance schedule and Chevron's documentation that it is infeasible to meet the final limits for mercury proposed in the RWQCB's tentative order.

Infeasibility Demonstration.

In support of its request, Chevron submits the following demonstration that it is infeasible to achieve immediate compliance with the limits of 0.01 ug/L (AMEL) and 0.038 ug/L (MDEL) for mercury.

As defined in the SIP, infeasible means

> "not capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors"

In this case, the SIP defines a "reasonable period of time" to be "immediate." Therefore, in cases where, as here, the actions needed to achieve compliance could not be implemented by the permit's effective date, they could not be completed within a reasonable period of time. In addition to this timing factor, possible actions to achieve compliance must be evaluated in light of the defined factors to determine their feasibility.

Staff has calculated a proposed final Water Quality Based effluent of 0.01 ug/L (AMEL) and 0.038 ug/L (MDEL). Chevron's performance history relating to this constituent reflects that Chevron's effluent does not meet this limit. Further, as explained in greater detail below, Chevron has undertaken a variety of efforts to date to reduce its discharge loading as much as possible and cannot achieve immediate compliance with the proposed final limits for the following reasons:

- Source of the contaminant is generally acknowledged to be a historical legacy pollutant.

- We do not currently have a complete understanding of the chemistry, speciation, and fate of the contaminant in our treatment system and need more time to develop this understanding before we design effective measures to improve performance

- If any major projects were to be generated as the result of identifying additional practical treatment or source control technologies, we would have to go through a permitting process and might trigger CEQA and an environmental impact analysis. Permitting and CEQA processes can be very time consuming.

- A detailed program to develop alternative feasibility technologies may be required, as outlined below

Given the efforts to date, it is unclear what additional actions and measures may be necessary to meet that limit. A number of steps will be needed to determine what actions may be necessary and feasible in order to achieve compliance with this limit. Those steps will involve additional studies to evaluate future options, and those studies may demonstrate that new technology or new methods are necessary, appropriate and feasible. For example, Chevron may evaluate options, using criteria such as the following:

- Known, demonstrated technology that is available and has been demonstrated in refineries or related industries;
- Ability to achieve required effluent levels;
- Ability to pilot or demonstrate the technology in Chevron's plant;
- Implementation time for a given technology;
- Feasibility and cost effectiveness.

Certainly, carrying out these steps will be costly and time-consuming and may require additional environmental analyses and permits. In any case, they can not be completed and implemented in time for this permit to go into effect.

For the reasons discussed above, Chevron believes it is infeasibility to achieve immediate compliance with the proposed effluent limit for MERCURY.

Mercury is a CWA §303(d)-listed constituent. Its presence in the refinery wastewater occurs at very low levels (typically <0.12 ug/L in the effluent). Mercury is a trace constituent in crude oil, in which it may be present in several different chemical forms with different physical properties.

Because mercury is a §303(d)-listed constituent, ultimately a final limit for mercury will be based on a TMDL and a waste load allocation (WLA) for the refinery. Notwithstanding that the TMDL has not been completed, the permit writer has proposed a WQBEL for mercury in the tentative order of 0.01 ug/L average monthly effluent level (AMEL) and 0.038 ug/L maximum daily effluent level (MDEL). Chevron does not feel it can consistently comply with either limit today or in the near future.

In the following sections Chevron will document:

A. Diligent efforts made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream, and the results of those efforts;

B. Source control and/or pollution minimization efforts currently underway or completed;

C. A proposed schedule for additional or future source control measures, pollution minimization actions, or waste treatment;

D. A demonstration that the proposed schedule is as short as practicable.

A. Pollutant Levels and Sources.

Final Limits.

The proposed WQBEL final limits for mercury are:

AMEL: 0.01 ug/L
MDEL: 0.038 ug/L

Effluent data:

Mercury is monitored monthly in refinery effluent. Table 1.0 summarizes mercury data for the last three years. These data show:

- The average effluent mercury was 0.092 ug/L
- The average effluent mercury for Jan. - Oct. 2000, using clean methods and EPA Method1631, was 0.017 ug/L
- The maximum observed value was 0.123 ug/L
- The maximum effluent mercury for Jan. - Oct. 2000, using clean methods and EPA Method1631, was 0.062 ug/L

These data demonstrate that the final limits cannot currently be met.

Sources:

Sources of mercury include historical residues from laboratory thermometers, manometers, and mechanical switches, and desalter effluent water. It may possibly be found through analysis in Refinery groundwater samples and in

discharges to the Refinery's Effluent Treatment System from General Chemical Corporation. Mercury may also be entering the Refinery as a natural component of crude oil.

- Historical Spills: Mercury has been periodically identified in the process sewer system and is believed to result from historic spills due to broken process instrumentation (thermometers, manometers, and switches) and laboratory equipment. Identification of this source has occurred during plant dismantling and clean-up activities where process sewer systems are disturbed. Where discovery of this nature has occurred, the affected process sewer system has been flushed; the flush water captured and processed for mercury reduction.

- Desalter Effluent: Mercury has been detected in the refinery crude oil desalter effluent. The desalter process uses overhead condensate, stripped sour water, or potable water to wash crude oil feed for salt removal prior to processing in the Refinery's crude distillation unit. A potential source of the metals in the desalter effluent may be the crude oil, or the stripped sour water from the plant sour water concentrator. Mercury is a small and predominantly non-detectable component in crude oil.

- Groundwater: As part of the Groundwater Protection System (GPS) groundwater is extracted along the Refinery's perimeter and discharged into the Refinery effluent system. The GPS is designed to create a hydraulic barrier around the refinery's perimeter to prevent the offsite migration of groundwater contaminants. While we have limited, if any data, on the mercury content of the extracted groundwater, a review of groundwater analytical data from upgradient monitoring wells indicates the presence of small amounts of mercury.

- General Chemical Corporation: Mercury has been detected in effluent discharged to the Refinery from General Chemical Corporation's Richmond Works facility. This facility produces sulfuric acid.

Only recently has there been reliable data on mercury in crude oil. We believe that most old data on mercury in crude is not reliable. New methods and clean techniques have led to better data in recent years

Minimization / Reduction Practices: Chevron's current minimization practice is managed through a refinery instruction (Mercury--Procedure for Cleaning Up, Storage, and Disposition Of Used And Cleaned Up Mercury). Refinery procedures require that mercury spills be promptly reported and remediated. Quality Control Division and Refinery Plant Protection personnel are trained to manage and clean up small mercury spills (e. g. laboratory thermometers). Should a large mercury spill (manometers, etc.) occur, it would be managed by

the Refinery Hazardous Waste Section, and accomplished through an outside contract.

In the effluent system, it is believed that mercury reaching the system is ultimately occluded to biological floc, and is removed when the floc is settled out before discharge. Additionally, granular activated carbon (GAC) will tend to remove additional suspended mercury and/or bio floc. However, neither biological treatment nor GAC are considered principle technologies for metals removal.

The level of mercury in refinery effluents (e.g., 10 - 100 ng/L) is generally orders of magnitude lower than traditional technologies for metals treatment are expected to achieve.

C. Pollution Minimization Actions and Schedule

The Discharger agrees to participate in the development of a TMDL for Mercury. The Discharger will give a written annual update to the RWQCB staff to document the progress made towards development of the TMDL.

Chevron will conduct any source control or pollution minimization studies in accordance with California Water Code §13263.3 and §2.1 of the SIP. In accordance with CWC §13263.3, this work will proceed outside of the NPDES permit itself, and will not be a condition of this permit.

D Why schedule is as short as practical.

The Discharger and the RWQCB staff both recognize that the development of TMDLs will likely take longer than the permit term. The schedule for adoption of the TMDL determines the length of the compliance schedule and, on that basis, is as short as possible. The Discharger agrees to work with the staff to again evaluate the length of the compliance schedule during consideration of the Discharger's next NPDES permit.

MERCURY Final Limit Infeasibility Evaluation Data, May 2001
Chevron Richmond Refinery Table 1.0
3 Year Evaluation Period: November 1997 to October 2000*

* - Data based on existing permit application submittals

			Mercury (0.00021 mg/l)					
	Days/Mth	(A) Flow mmgpd, Average monthly based on daily data	Standard Analysis Method 245.1 Value (1/00 - 10/00) - not used in calculation	mg/l (ppm)	Lbs/day based on daily flowrate average (Col A)	Monthly Average Mass Loading, lbs/mth (Col A)	RAAM (lb/mth basis) based on Average monthly flowrate, daily data	RAAM (lb/day basis) based on Average monthly flowrate, daily data
Nov-97	30	8.34		0.000120	0.008352	0.250550		
Dec-97	31	10.02		0.000120	0.010034	0.311055		
Jan-98	31	12.10		0.000120	0.012117	0.375625		
Feb-98	28	19.61		0.000120	0.019637	0.549849		
Mar-98	31	8.13		0.000120	0.008141	0.252383		
Apr-98	30	6.73		0.000123	0.006908	0.207237		
May-98	31	6.08		0.000120	0.006089	0.188744		
Jun-98	30	5.43		0.000120	0.005438	0.163128		
Jul-98	31	5.21		0.000120	0.005217	0.161736		
Aug-98	31	4.56		0.000120	0.004566	0.141558		
Sep-98	30	4.67		0.000120	0.004677	0.140296		
Oct-98	31	5.85		0.000120	0.005858	0.181604	**0.24365**	0.008086
Nov-98	30	6.65		0.000120	0.006659	0.199779	**0.23942**	0.007945
Dec-98	31	7.98		0.000120	0.007991	0.247726	**0.23414**	0.007775
Jan-99	31	7.04		0.000120	0.007050	0.218546	**0.22105**	0.007353
Feb-99	28	10.80		0.000120	0.010815	0.302823	**0.20046**	0.006617
Mar-99	31	8.55		0.000120	0.008562	0.265421	**0.20155**	0.006652
Apr-99	30	6.78		0.000120	0.006789	0.203685	**0.20125**	0.006643
May-99	31	4.81		0.000120	0.004817	0.149319	**0.19797**	0.006537
Jun-99	30	4.47		0.000120	0.004476	0.134288	**0.19557**	0.006457
Jul-99	31	4.11		0.000120	0.004116	0.127588	**0.19272**	0.006365
Aug-99	31	5.10		0.000120	0.005107	0.158321	**0.19412**	0.006410
Sep-99	30	4.26		0.000120	0.004266	0.127979	**0.19309**	0.006376
Oct-99	31	5.66		0.000120	0.005668	0.175706	**0.19260**	0.006360
Nov-99	30	5.22		0.000120	0.005227	0.156819	**0.18902**	0.006240
Dec-99	31	5.63		0.000120	0.005638	0.174774	**0.18294**	0.006044
Jan-00	31	10.03	0.000120	0.0000622	0.005206	0.311365	**0.19067**	0.005891
Feb-00	29	15.97	0.000120	0.0000329	0.004385	0.463778	**0.20409**	0.005355
Mar-00	31	9.55	0.000120	0.0000180	0.001435	0.296464	**0.20667**	0.004761
Apr-00	30	5.74	0.000120	0.0000077	0.000367	0.172441	**0.20407**	0.004226
May-00	31	6.05	0.000120	0.0000094	0.000476	0.187813	**0.20728**	0.003864
Jun-00	30	5.75	0.000120	0.0000096	0.000461	0.172742	**0.21048**	0.003529
Jul-00	30	5.98	0.000120	0.0000165	0.000823	0.179651	**0.21482**	0.003255
Aug-00	31	5.31	0.000080	0.0000070	0.000308	0.109894	**0.21079**	0.002855
Sep-00	30	5.50	0.000080	0.0000068	0.000312	0.110154	**0.20930**	0.002525
Oct-00	31	5.48	0.000080	0.0000069	0.000313	0.113412	**0.20411**	0.002079
Nov-00	*30*	*7.68*	*0.000080*	*0.0000114*	*0.000731*	*0.153815*	***0.20386***	*0.001705*
Dec-00	*31*	*11.50*	*0.000080*	*0.0000317*	*0.003042*	*0.237999*	***0.20913***	*0.001488*
Jan-01	*31*	*6.81*	*0.000080*	*0.0000087*	*0.000496*	*0.140937*	***0.19493***	*0.001096*
Feb-01	*28*	*8.6*	*0.000080*	*0.0000137*	*0.000981*	*0.160384*	***0.16964***	*0.000812*

	11/97 - 10/00	**mg/l (ppm)**	
Sample Count	**Limit (ppm)**	0.000210	
36	**Min**	0.000007	
Italic = additional data	**Avg**	0.000092	